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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,492	12/26/2001	Hiroyuki Hattori	02860.0700	7896

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AR

Office Action Summary	Application No. 10/025,492	Applicant(s) HATTORI ET AL.	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/13/05, 5/10/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-8 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/13/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 6/13/05 and 5/10/05 have been entered.

Election/Restrictions

2. The Examiner notes that the instant application was previously subject to a restriction requirement in the Office Action, dated 3/26/03, the Applicant having elected Invention I. Since a request for continued examination was filed under 37 CFR 1.114, the invention previously elected, i.e. Claims 1-2, 4-5, will be examined in the instant application.

Response to Amendment

3. The amendments to Claim 1 in the submission dated 5/10/05 are acknowledged and accepted.

Response to Arguments

4. The Applicants' arguments with respect to the rejections of Claims 1-2, 4-5 in the Office Action dated 3/16/05 have been considered but are moot in view of the new ground(s) of rejection.
5. Claims 1-2, 4-5 are now rejected as follows.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
7. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meguro et al. (JP 09-131802), of record, in view of Meyers (U.S. Patent No. 5543966), of record, and Ueda et al. (U.S. Patent No. 6215591), of record.
- Meguro et al. discloses an optical element (See for example 1, 2 in Figures 1, 2, 6) molded between a first die (See for example 4 in Figure 1) and a second die (See for example 7 in Figure 1) which are jointed along a partition line (See partition between 4/5 and 7 in Figure 1), the optical element comprising a first optical surface (See surface of optical element near 1a in Figure 1); a second optical surface (See surface of optical element near 1b in Figure 1) being a refractive surface opposite to the first optical surface; a flange (See region near 2 in Figure 1) having a flange surface (See horizontal surface between surfaces 1a and 1b in Figure 1) provided around a periphery of the

optical element, a first edge portion (See for example vertical surface between surface 1a and flange in Figure 1) of the flange surface adjoining to the first optical surface and a second edge portion (See for example angled and vertical surfaces between surface 1b and flange in Figure 1) of the flange surface adjoining to the second optical surface, wherein the second edge portion is positioned at the partition line between the first die and the second die. Meguro et al. additionally discloses the optical element having an optical axis (See optical axis of the optical element is taken to be an imaginary horizontal line running horizontally through the center of the optical element and in the plane of the page of Figure 2) and the flange surface being parallel to the optical axis (See Figures 1, 2, 6); the first surface being a convex surface (See 1a in Figure 1); and the flange having a side surface at the second edge portion and the side surface being tapered from the second edge portion (See for example angled and vertical surfaces between surface 1b and flange in Figure 1). Meguro et al. lacks a diffractive structure provided on the convex optical surface. However, Meyers teaches an optical element molded between a first die and a second die which are jointed along a partition line (See Figures 2 and 24), comprising a first optical surface on which a diffractive structure is provided (See 3 of Figure 2; S2 of Figure 24 for example); a second optical surface being a refractive surface opposite to the first optical surface (See 1 of Figure 2; S1 of Figure 24 for example); a flange having a flange surface provided around a periphery of the optical element (See upper and lower edge portions of element 10 in Figure 2; see upper and lower edge portions of molded element in Figure 24), a first edge portion of the flange surface adjoining to the first optical surface and a second edge portion of the flange

surface adjoining to the second optical surface (See Figure 2 specifically); and the diffractive structure of the first optical surface being shaped in a plurality of ring-shaped diffractive zones (See Figures 2 and 3 for example), such as a plurality of ring-shaped steps (See 3 in Figure 4; Figure 5A). The combined teachings of Meguro et al. and Meyers lack the first surface being the convex surface on which the diffractive structure is provided. However, it is well known in the art that diffractive structure may be provided on one or both surfaces of a lens to produce a diffractive optical element. For example, Ueda et al. teaches a conventional diffractive optical element functioning as a lens (See for example Figure 4), wherein both surfaces, and in particular the convex surface, of the lens incorporates diffractive grating structure (See 20, 21 in Figure 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a diffractive structure be provided on the convex optical surface, as taught by Meyers and Ueda et al., in the optical element of Meguro et al., for the purpose of providing enhanced optical characteristics to the lens, such as higher numerical aperture or variable focal length.

8. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meguro et al. in view of Meyers and Ueda et al.

Meguro et al. in view of Meyers and Ueda et al. discloses the invention as set forth above in Claim 1, except for the diffractive structure of the first optical surface being shaped in a plurality of ring-shaped diffractive zones, such as a plurality of ring-shaped steps. However, the use of ring-shaped diffractive zones, such as a plurality of ring-shaped steps, in diffractive optical elements is well known in the art. For example Ueda

et al. additionally discloses the diffractive structure of the first optical surface being shaped in a plurality of ring-shaped diffractive zones (See Figures 2 and 3 for example), such as a plurality of ring-shaped steps (See 3 in Figure 4; Figure 5A). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the diffractive structure of the first optical surface be shaped in a plurality of ring-shaped diffractive zones, such as a plurality of ring-shaped steps, as further taught by Ueda et al., in the optical element of Meguro et al. in view of Meyers and Ueda et al., for the purpose of providing appropriate adjustment of the diffraction efficiencies of the various diffraction orders of the diffractive structure to achieve a particular function, such as increased light convergence.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP 878291 A1 to Richards.

Richards is being cited to evidence conventional methods and tools utilized to fabricate diffractive optical elements having planar and curved surfaces (See for example Figures 1, 5-9).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 9:30 AM - 6 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias
Patent Examiner
Group Art Unit 2872
8/9/05